

Remarks

The Office Action mailed May 22, 2002 has been received and reviewed. Claims 1, 6-7, 9, 11-12, 14, 20-24, 27, 29-31, 33-37, 39-48 having been amended, claims 2-5, 25-26, and 28 having been cancelled without prejudice, and claims 49-57 having been added, the pending claims are claims 1, 6-24, 27, 29-57. Applicants respectfully submit no new matter was added in claims 49-57, and that the claims are supported by the specification. Applicants respectfully request reconsideration and withdrawal of the rejections.

The 35 U.S.C. §103 Rejection

The Office Action rejected claims 1-3, 5, 6, 9-26, 28, 29, and 33-48 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 4,675,147 to Schaefer *et al.* (hereinafter “Schaefer”) in view of U.S. Patent No. 5,631,825 to van Weele *et al.* (hereinafter “van Weele”). Applicants generally traverse this rejection, and further address each rejection in detail as follows.

Claims 1 and 24

Applicants amended claims 1 and 24 to clearly describe claimed subject matter that is patentable over the cited references. However, Applicants submit that the claims as originally written were distinguishable over the cited references as set forth in the response to the previous office action. Applicants have amended claim 1 to include the subject matter that was recited in now cancelled claim 5, and have amended claim 24 to include the subject matter that was recited in now cancelled claim 28. Insofar as the rejection is applied to amended claims 1 and 24 Applicants respectfully traverse the rejection of claim 1 and 24, as follows.

In claims 1 and 24, as amended, Applicants teach a graphical user interface for providing real-time process information to a user with regard to a process that is operable under control of one or more process variables. The graphical user interface includes a scale extending along a gauge axis, one or more bars that extend along the gauge axis, and a graphical shape displayed

along the gauge axis. The one or more bars include a first bar and a second bar extending along the gauge axis. A first end of the first bar is representative of an engineering hard high limit for the process variable and a second end of the first bar is representative of an engineering hard low limit for the process variable. A first end of the second bar is representative of an operator set high limit for the process variable and a second end of the second bar is representative of an operator set low limit for the process variable. The graphical shape is representative of a current value of the process variable that is provided to the graphical user interface.

Applicants respectfully submit that Schaefer and van Weele fail to teach or suggest all the claim limitations of claims 1 and 24. For example, Schaefer and van Weele fail to teach or suggest a first bar and a second bar that both extend along the same gauge axis, as provided in claims 1 and 24. Schaefer recites “spokes 1 through 8 radiating from the common origin 0 each represents the scale for one or more process parameters”, where the “[u]pper limits for each parameter are plotted at points 18 through 25 at a second fixed distance from the common origin 0” and the “lower limits are plotted at points 26 through 33 at a third fixed distance from the origin” (Col. 8, 36-53). In other words, Schaefer fails to teach or suggest that both a first bar and a second bar extend along the same gauge axis of graphical user interface. In addition, nothing in van Weele compensates for the shortcomings of Schaefer.

In addition, the Examiner states that for claims 1 and 24 “[t]he differences between the claim and Schaefer et al. is one or more bars extending along the gauge axis, each bar representative of a set of high and low process limit values for a process variable” (Office Action, “Claim Rejections – 35 USC § 103”) The Examiner also stated that for claims 1 and 24 that “Schaefer et al. teaches in figure 1, one bar (26) represents for the low limit value and other bar (18) represents for the high limit value” (Office Action, “Response to Arguments”). As such, the Examiner has alleged that Schaefer both teaches and does not teach one or more bars extending along the gauge axis, each bar representative of a set of high and low process limit values for a process variable. Applicants respectfully submit that the Examiner’s position that Schaefer does not teach such one or more bars is clearly correct.

Furthermore, Applicants respectfully submit that Schaefer and van Weele fail to provide a suggestion or a motivation to modify the references or to combine the reference teachings so as to arrive at the subject matter recited in either claim 1 or 24. In addition, with respect to the Examiner's rejection of the subject matter of claims 5 and 28 (the subject matter that has been incorporated into amended claims 1 and 24, respectively) the Examiner has failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for one skilled in the art to modify the reference or to combine references, as asserted in the office action.

Claims 6, 9-23, 29, and 33-48

With respect to claims 6, 9-23, 29, and 33-48, Applicants respectfully submit that these claims are also patentable as further limitations of patentable base claims 1 and 24. Furthermore, claims 6, 11-12, 14, 19-23, 29, 33, 35-37, 39, 44 and 45-48, are each patentable over Schaefer and van Weele based on the subject matter recited in each of the claims.

For claims 6 and 29, the Examiner asserts that "van Weele et al. teaches the second bar extending along the gauge axis representative of operator set high and low limits for the process variable on column 31, lines 1-15". The Examiner then states that "However, Schaefer teaches more detail about the engineering hard high and low limits for the process variable on figure 1, (18), (26)". Applicants respectfully traverse the rejections.

Claims 6 and 29 recite, in part, that "the second bar . . . extends along the gauge axis within the first bar" Schaefer and van Weele fail to teach or suggest that a second bar extends along a gauge axis within a first bar. Furthermore, the Examiner fails to assert that Schaefer and van Weele teach or suggest this aspect of claims 6 and 29. Moreover, the portions of Schaefer and van Weele cited by the Examiner simply fail to teach or suggest this aspect of claims 6 and 29. In addition, the Examiner has failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary

skill in the art, for one skilled in the art to modify the reference or to combine references, so as to arrive at the subject matter recited in claims 6 and 29.

For claims 9 and 10, Applicants respectfully traverse the Examiner's assertions and respectfully repeat the arguments presented for claim 1 in support of the patentability of claims 9 and 10.

For claims 11, 12 and 35-37, Applicants respectfully traverse the rejections and repeat the arguments presented in their response to the Office Action dated 8 November 2001. In addition, Applicants reemphasize that nothing in Schaefer teaches or suggests that pointer flags are draggable along a gauge axis to change engineering hard limits. The portion of Schaefer cited by the Examiner appears only to recite generating, normalizing and locating the actual values of the operating parameters along the vertices of the polygon.

The Examiner also provides an additional statement that "van Weele et al. shows the pointer flags clearly on figure 33, (332), (334)". In addition, the Examiner further states in the "Response to Arguments" section that with regard to the claims "Applicant has argued that the prior art does not teach the one or more manipulation pointer flags . . . [but that] [t]he Examiner does not agree because Van Weele et al. shows the feature on figure 33 (332, 334)". Applicants respectfully submit that this assertion introduces a new ground for the rejection of the claims as the Examiner uses an additional reference (i.e., van Weele, which was not used in rejecting the claims in the first office action) as the basis for responding to Applicants' arguments.

In addition, the Examiner has failed to identify some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, for one skilled in the art to modify the reference or to combine references, so as to arrive at the subject matter recited in claims 11, 12 and 35-37.

For claims 14 and 39, Applicants respectfully traverse the rejections and repeat the arguments presented in their response to the Office Action dated 8 November 2001. In addition, the Examiner now asserts that figure 5 of Schaefer teaches the subject matter recited in claims 14 and 39. Applicants respectfully traverse this assertion. Fig. 5 of Schaefer shows "a view of a

graphical display” that indicates “the presence of an abnormality in the operation of the PWR plant illustrated in FIG. 3” (Col. 5, lines 30-34). In Fig. 5, none of the individual spokes (1 through 8) show an additional graphical shape displayed along the gauge axis. Schaefer uses the same shapes along the spokes in the graph of Fig. 5 as are used in the graph of Fig. 3. As such, Schaefer fails to teach or suggest the subject matter recited in claims 14 and 39.

For claim 19, Applicants respectfully traverse the rejections and repeat the arguments presented in their response to the Office Action dated 8 November 2001. In addition, the Examiner states that “it is inherent that the user low and high limit values would be inside the engineering high and low limits since they are set for safety. Therefore, it is easy to understand that the graphical shape representative of the current value of the process variable is outside of the high and low process limit values.” Applicants respectfully traverse this assertion, and respectfully submit that even if this were true for argument sake, this still does not teach or suggest that a background of a region adjacent the one or more bars along the gauge axis is of a color when the graphical shape representative of the current value of the process variable is outside of the high and low process limit values, and further where the region is representative of engineering physical limits of the process variable, as recited in claim 19.

For claims 20-23 and 33, Applicants respectfully traverse the rejections and repeat the arguments presented in their response to the Office Action dated 8 November 2001.

For claims 44-48, Applicants respectfully traverse the rejections and repeat the arguments presented in their response to the Office Action dated 8 November 2001.

Based on at least the forgoing reasons, the Office Action fails to establish a *prima facie* case of obviousness for the rejection of claims 1, 6-24, 27, 29-57. Applicants respectfully request reconsideration and allowance of claims 1, 6-24, 27, 29-57.

Premature Final Rejection

Applicants respectfully submit that the Finality of the instant Office Action is premature. The M.P.E.P. provides that second or any subsequent actions on the merits shall be final, except where the Examiner introduces a new ground of rejection that is neither necessitated by applicants' amendment of the claims nor based on information submitted in an information disclosure statement. No claims were amended in response to the Office Action dated 8 November 2001, nor was an information disclosure statement submitted. However, Applicants respectfully submit that at least one new ground for rejection was introduced in the Final Office Action. For example, the grounds for motivation as to why one skilled in the art would have modified and/or combined Schaefer and van Weele was introduced in the Final Office action for the first time. Applicants respectfully submit that a reasonable opportunity to respond to the newly cited motivation has not been afforded to the Applicants by the Examiner. As such, Applicants respectfully request withdrawal of the finality of the instant office action and that a notice of allowance for the pending claims or a second non-final office action be issued by the Examiner.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 4, 7, 8, 27, and 30-32 would be allowable if rewritten in independent form including all of the base claim and any intervening claims. In response thereto, Applicants present new claims 49-57. Claim 49 is an independent claim that recites the subject matter of independent claim 1 (prior to its amendment in the instant office action) and claims 3 and 4, which are dependent claims. Claim 53 is an independent claim that recites the subject matter of independent claim 24 (prior to its amendment in the instant office action) and claims 26 and 27, which are dependent claims. No new matter has been added in new claims 49-57.

Applicants respectfully request consideration and allowance of claims 49-57.

Amendment and Response Under 37 C.F.R. §1.116 –

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Summary

It is respectfully submitted that the pending claims 1, 6-24, 27, 29-57 are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicants' Representatives, at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted for

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CERTIFICATE UNDER 37 CFR §1.10:

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The undersigned hereby certifies that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR §1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

By: 

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Amendment and Response Under 37 C.F.R. §1.116 – Appendix A

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**APPENDIX A - SPECIFICATION/CLAIM AMENDMENTS
INCLUDING NOTATIONS TO INDICATE CHANGES MADE**

Serial No.: 09/346,412

Docket No.: H16-25990

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Amendments to the following are indicated by underlining what has been added and bracketing what has been deleted. Additionally, all amendments have been shaded.

In the Claims

For convenience, all pending claims are shown below.

1. (AMENDED) A graphical user interface for providing real-time process information to a user with regard to a process that is operable under control of one or more process variables, the graphical user interface comprising:

a scale extending along a gauge axis;

one or more bars extending along the gauge axis, each bar representative of a set of high and low process limit values for a process variable, wherein the one or more bars extending along the gauge axis comprises:

a first bar extending along the gauge axis, wherein a first end of the first bar is representative of an engineering hard high limit for the process variable and a second end of the first bar is representative of an engineering hard low limit for the process variable;

and

a second bar extending along the gauge axis, wherein a first end of the second bar is representative of an operator set high limit for the process variable and a second end of the second bar is representative of an operator set low limit for the process variable; and

a graphical shape displayed along the gauge axis representative of a current value of the process variable.

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6. (AMENDED) The graphical user interface of claim [5]1, wherein the second bar extending along the gauge axis representative of operator set high and low limits for the process variable extends along the gauge axis within the first bar representative of the engineering hard high and low limits for the process variable.

7. (AMENDED) The graphical user interface of claim 6, wherein the one or more bars extending along the gauge axis further [include] comprise a delta soft high region within the second bar and adjacent the first end thereof and a delta soft low region within the second bar and adjacent the second end thereof, and further wherein the delta soft high region and the delta soft low region are representative of a delta optimization range within the operator set high and low limits.

8. The graphical user interface of claim 7, wherein the delta soft high region and the delta soft low region overlap within the second bar to provide for optimization to a pseudo set point.

9. (AMENDED) The graphical user interface of claim 1, wherein the graphical user interface further [includes] comprises user manipulation elements movable to change one or more of the high and low process limit values.

10. The graphical user interface of claim 9, wherein the scale extending along the gauge axis is automatically adjustable as a function of the movement of the user manipulation elements.

11. (AMENDED) The graphical user interface of claim 9, wherein the user manipulation elements [include] comprise one or more manipulation pointer flags associated with operator set limits, the one or more manipulation pointer flags are draggable along the gauge axis to change such operator set limits.

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12. (AMENDED) The graphical user interface of claim 9, wherein the user manipulation elements [include] comprise one or more manipulation pointer flags associated with the engineering hard limits, the one or more manipulation pointer flags are draggable along the gauge axis to change such engineering hard limits.

13. The graphical user interface of claim 1, wherein the graphical shape representative of the current value of the process variable is a pointing device proximate to the scale.

14. (AMENDED) The graphical user interface of claim 1, wherein the graphical user interface further [includes] comprises at least one additional graphical shape displayed along the gauge axis representative of at least one additional value for the process variable.

15. The graphical user interface of claim 14, wherein the additional graphical shape representative of at least one additional value for the process variable has a color of a set of colors that reflects the state of the current value for the process variable relative to the set of high and low process limit values.

16. The graphical user interface of claim 1, wherein the scale extending along the gauge axis is adjustable as a function of a current value of the process variable relative to the one or more process limits values.

17. The graphical user interface of claim 1, wherein the graphical shape representative of the current value of the process variable has a color of a set of colors that reflects the state of the current value for the process variable relative to the set of high and low process limit values.

18. The graphical user interface of claim 17, wherein a color for the graphical shape represents one of a current value of the corresponding process variable being within the set of

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high and low process limit values, the current value of the corresponding process variable being within a certain percentage of a limit value of the set of high and low process limit values, and the current value of the corresponding process variable being outside of the set of high and low process limit values.

19. The graphical user interface of claim 1, wherein a background of a region adjacent the one or more bars along the gauge axis is of a color when the graphical shape representative of the current value of the process variable is outside of the high and low process limit values, and further wherein the region is representative of engineering physical limits of the process variable.

20. (AMENDED) The graphical user interface of claim 1, wherein the graphical user interface further includes comprises a trend graph for the process variable.

21. (AMENDED) The graphical user interface of claim 20, wherein the trend graph includes comprises at least one of a historical trend graph and a prediction trend graph for displaying trend information representative of process variable values.

22. (AMENDED) The graphical user interface of claim 20, wherein the trend graph includes comprises at least one of a historical trend graph and a prediction trend graph for displaying trend information representative of process variable limits.

23. (AMENDED) The graphical user interface of claim 1, wherein the one or more process variables include comprise a plurality of manipulated variables and a plurality of controlled variables of a continuous multivariable process.

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24. (AMENDED) A computer implemented method for providing a graphical user interface for providing real-time process information to a user for a process that is operable under control of one or more process variables, the method comprising:

displaying a scale extending along a gauge axis;

displaying one or more bars extending along the gauge axis, each bar representative of a set of high and low process limit values for a process variable, wherein displaying one or more bars extending along the gauge axis comprises:

displaying a first bar extending along the gauge axis, wherein a first end of the first bar is representative of an engineering hard high limit for the process variable and a second end of the first bar is representative of an engineering hard low limit for the process variable; and

displaying a second bar extending along the gauge axis, wherein a first end of the second bar is representative of an operator set high limit for the process variable and a second end of the second bar is representative of an operator set low limit for the process variable;

providing data representative of at least the current value of the process variable; and

displaying a graphical shape along the gauge axis representative of the current value of the process variable relative to the set of high and low process limit values.

27. (AMENDED) The method of claim [26] 24, wherein displaying one or more bars extending along the gauge axis further [includes] comprises displaying a delta soft high region within the [first] second bar and adjacent the first end thereof and a delta soft low region within the [first] second bar and adjacent the second end thereof, and further wherein the delta soft high region and the delta soft low region are representative of a delta optimization range within the operator set high and low limits.

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29. (AMENDED) The method of claim [28] 24, wherein displaying the one or more bars extending along the gauge axis [includes] comprises displaying the second bar extending along the gauge axis representative of the operator set high and low limits for the process variable within the first bar representative of engineering hard high and low limits for the process variable.

30. (AMENDED) The method of claim 29, wherein displaying one or more bars extending along the gauge axis further [includes] comprises displaying a delta soft high region within the second bar and adjacent the first end thereof and a delta soft low region within the second bar and adjacent the second end thereof, and further wherein the delta soft high region and the delta soft low region are representative of a delta optimization range within the operator set high and low limits.

31. (AMENDED) The method of claim 29, wherein displaying the delta soft high region within the second bar and adjacent the first end thereof and a delta soft low region within the second bar and adjacent the second end thereof [includes] comprises:

receiving user input representative of the delta values; and
displaying a delta soft high region and a delta soft low region that overlap providing for an optimization pseudo set point within the operator set high and low limits.

32. The method of claim 31, wherein the optimization pseudo set point is proportional to the delta soft high region and delta soft low region.

33. (AMENDED) The method of claim 24, wherein the method further [includes] comprises:

displaying user manipulation elements movable to change one or more of the high and low process limit values;

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moving such user manipulation elements to generate data representative of changed high or low process limit values; and
providing such data to a controller of the process.

34. (AMENDED) The method of claim 33, wherein the method further [includes] comprises rescaling the scale extending along the gauge axis as a function of the movement of the user manipulation elements.

35. (AMENDED) The method of claim 33, wherein moving such user manipulation elements to generate data [includes] comprises dragging one or more manipulation pointer flags associated with the operator set limits along the gauge axis to change such operator set limits.

36. (AMENDED) The method of claim 33, wherein moving such user manipulation elements to generate data [includes] comprises dragging one or more manipulation pointer flags associated with the engineering hard limits along the gauge axis to change such engineering hard limits.

37. (AMENDED) The method of claim 33, wherein moving such user manipulation elements to generate data [includes] comprises dragging one or more manipulation pointer flags associated with the delta soft limits along the gauge axis to change such delta soft limits.

38. The method of claim 24, wherein the graphical shape representative of the current value of the process variable is a pointing device proximate to the scale extending along the gauge axis.

39. (AMENDED) The method of claim 24, wherein the method further [includes] comprises displaying at least one additional graphical shape along the gauge axis representative of an additional value for the process variable.

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40. (AMENDED) The method of claim 39, wherein displaying the at least one additional graphical shape [includes] comprises displaying at least one additional pointing device proximate to the scale extending along the gauge axis.

41.(AMENDED) The method of claim 24, wherein the method further [includes] comprises rescaling the scale extending along the gauge axis as a function of the current value of the process variable relative to the set of high and low process limit values.

42. AMENDED) The method of claim 24, wherein displaying the graphical shape representative of the current value of the process variable [includes] comprises:

determining a state of the current value of the process value relative to the set of high and low process limit values; and

displaying the graphical shape in a color of a set of colors that reflects the state of the current value for the process variable.

43. (AMENDED) The method of claim 42, wherein determining the state of the current value of the process value relative to the set of high and low process limit values [includes] comprises determining whether the current value of the process variable is within the set of high and low process limit values, determining whether the current value of the process variable is within a certain percentage of a limit value of the set of high and low process limit values, and determining whether the current value of the process variable is a certain percentage outside of the set of high and low process limit values.

44. (AMENDED) The method of claim 24, wherein the method further [includes] comprises:

determining whether the current value of the process variable is outside of the set of high and low process limit values; and

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displaying a graphical element representative of engineering physical limits of the process variable when the current value of the process variable is outside the set of high and low process limit values.

45. (AMENDED) The method of claim 44, wherein displaying a graphical element representative of engineering physical limits of the process variable [includes] comprises displaying a background region adjacent the one or more bars along the gauge axis in a particular color representative of engineering physical limits.

46. (AMENDED) The method of claim 24, wherein the method further [includes] comprises displaying a trend graph for the process variable with the displayed scale, one or more bars, and the graphical shape representative of the current value of the process variable.

47. (AMENDED) The method of claim 46, wherein displaying the trend graph [includes] comprises displaying at least one of a historical trend graph and a prediction trend graph for the process variable representative of process variable values.

48. (AMENDED) The method of claim 46, wherein displaying the trend graph [includes] comprises displaying at least one of a historical trend graph and a prediction trend graph for the process variable representative of process variable limits.

49. (NEW) A graphical user interface for providing real-time process information to a user with regard to a process that is operable under control of one or more process variables, the graphical user interface comprising:

a scale extending along a gauge axis;

one or more bars extending along the gauge axis, each bar representative of a set of high and low process limit values for a process variable, wherein the one or more bars extending along

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the gauge axis comprise a first bar extending along the gauge axis, wherein a first end of the first bar is representative of an operator set high limit for the process variable and a second end of the first bar is representative of an operator set low limit for the process variable, and further wherein the one or more bars extending along the gauge axis further comprise a delta soft high region within the first bar and adjacent the first end thereof and a delta soft low region within the first bar and adjacent the second end thereof, and further wherein the delta soft high region and the delta soft low region are representative of a delta optimization range within the operator set high and low limits; and

a graphical shape displayed along the gauge axis representative of a current value of the process variable.

50. (NEW) The graphical user interface of claim 49, wherein the one or more bars extending along the gauge axis further comprise a second bar extending along the gauge axis, wherein a first end of the second bar is representative of an engineering hard high limit for the process variable and a second end of the second bar is representative of an engineering hard low limit for the process variable.

51. (NEW) The graphical user interface of claim 50, wherein the first bar extending along the gauge axis representative of operator set high and low limits for the process variable extends along the gauge axis within the second bar representative of the engineering hard high and low limits for the process variable.

52. (NEW) The graphical user interface of claim 49, wherein the delta soft high region and the delta soft low region overlap within the first bar to provide for optimization to a pseudo set point.

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53. (NEW) A computer implemented method for providing a graphical user interface for providing real-time process information to a user for a process that is operable under control of one or more process variables, the method comprising:

displaying a scale extending along a gauge axis;

displaying one or more bars extending along the gauge axis, each bar representative of a set of high and low process limit values for a process variable, wherein displaying one or more bars extending along the gauge axis comprises displaying a first bar extending along the gauge axis, wherein a first end of the first bar is representative of an operator set high limit for the process variable and a second end of the first bar is representative of an operator set low limit for the process variable, and wherein displaying one or more bars extending along the gauge axis further comprises displaying a delta soft high region within the first bar and adjacent the first end thereof and a delta soft low region within the first bar and adjacent the second end thereof, and further wherein the delta soft high region and the delta soft low region are representative of a delta optimization range within the operator set high and low limits;

providing data representative of at least the current value of the process variable; and

displaying a graphical shape along the gauge axis representative of the current value of the process variable relative to the set of high and low process limit values.

54. (NEW) The method of claim 53, wherein displaying one or more bars extending along the gauge axis comprises displaying a second bar extending along the gauge axis, wherein a first end of the second bar is representative of an engineering hard high limit for the process variable and a second end of the second bar is representative of an engineering hard low limit for the process variable.

55. (NEW) The method of claim 53, wherein displaying the one or more bars extending along the gauge axis comprises displaying the first bar extending along the gauge axis representative of

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the operator set high and low limits for the process variable within the second bar representative of engineering hard high and low limits for the process variable.

56. (NEW) The method of claim 53, wherein displaying the delta soft high region within the first bar and adjacent the first end thereof and a delta soft low region within the first bar and adjacent the second end thereof comprises:

receiving user input representative of the delta values; and

displaying a delta soft high region and a delta soft low region that overlap providing for an optimization pseudo set point within the operator set high and low limits.

57. (NEW) The method of claim 56, wherein the optimization pseudo set point is proportional to the delta soft high region and delta soft low region.